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January 10, 2003

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, NW
Washington, DC 20554

Re: ***Ex Parte Presentation:***
IB Docket No. 01-185;
File No. SAT-ASG-20010302-00017 et al.;
File No. SES-ASG-20010116-00099 et al.

Dear Ms. Dortch:

This letter is written on behalf of Inmarsat Ventures plc as a follow up to (i) a meeting Inmarsat had on January 8, 2003 with Mr. Bryan Tramont, Mr. Ed Thomas, and Mr. Bob Eckert, and (ii) a conversation I had on January 9, 2003 with Mr. Eckert. In that conversation with Mr. Eckert, I reiterated Inmarsat's record positions about the interference that the Inmarsat system would receive from L-band ATC operations in the United States and briefly addressed the issues discussed in more detail below.

In this letter, Inmarsat clarifies an important aspect of its analysis about the level of predicted interference from L-band ATC handsets into Inmarsat spacecraft. Namely, it is critical to recognize that Inmarsat's analysis has been based on the number of simultaneously operating co-channel ATC ***carriers*** that would cause interference, and that the total number of simultaneously operating ATC ***user terminals*** that would be supported is ***eight times*** the maximum permissible number of 200 kHz ATC ***carriers,*** because of the TDMA nature of the CSM transmission scheme proposed by MSV.

Inmarsat also explains why it is simply unreasonable to assume that service to Inmarsat mobile terminals within the U.S. would not be disrupted by the existence of L-band ATC base stations. Inmarsat remains gravely concerned about the Commission's ability to authorize ATC in a manner that will not disrupt service over the Inmarsat system.

Level of Predicted ATC Interference Into Inmarsat Spacecraft.

Inmarsat's analysis throughout this proceeding has calculated the number of simultaneously operating, co-channel, 200 kHz, ATC carriers in the L-band uplink band that

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would cause harmful interference into Inmarsat satellites. Inmarsat's analysis concludes that, on average, a single MSV ATC transmitting carrier would cause a 0.213% increase in the receive system noise temperature of an Inmarsat-4 satellite.'

Depending on the ATC transmission scheme that the Commission may authorize, each separate, 200 kHz, ATC ***carrier*** could support ***eight separate*** ATC ***user terminals.*** Thus, hascd on certain representations that MSV has made about the EIRP and other characteristics of its ATC user terminals, Inmarsat has calculated that 28 simultaneously operating co-channel ATC carriers in the U.S., ***or about 224 simultaneously operating eo-channel ATC mobile user terminals in the U.S.***, would cause a ***6%*** increase in Inmarsat's system noise temperature. This level of interference from a non-conforming terrestrial service, operating at variance from the Table of Frequency Allocations, would seriously degrade the overall performance of the Inmarsat system.

As Inmarsat has previously explained, the interference margin in satellite systcnns is very limited, even before accounting for a non-conforming terrestrial use of a frequency band. Normally. a 1 dB aggregate allowance is made for intersystem interference from all other systems. This corresponds to an aggregate ΔT/T level of about 25%.[2] **As** the number of interferers increases, it becomes more important to ensure that each interferer is limited to a reasonable interference level. Inmarsat has to account in its link budgets for interference from all other L-band satellite networks--- there are currently over 20 satellites operating at L-band and the number has been growing over the last few years. Thus, with increasing use of L-band spectrum by satellite systems, the interference margin that could be made available for other sources of interference (such as ATC) is even less. **A** predicted level of ATC interference amounting to a ΔT/T level of 6% would result in ATC uses within the U.S. consuming about 25% of Inmarsat's overall aggregate interference margin.[3]

If ATC *service* spread to other countries, the situation would become even worse. 'The deployment of ATC in Canada, Mexico, South America, Europe, or anywhere else within the sidelobes of Inmarsat's antenna beams that cover the U.S., would result in ATC deployment consuming even more of Inmarsat's interference margin. Thus, ATC deployment would impose significant operational and capacity constraints on Inmarsat's use of the L-band for the primary satellite service to which it is allocated.

Technical Annex to Comments of Inmarsat Ventures plc, IB Docket No. 01-185 (filed October 19, 2001), at 3; "Quantification of Harmful Co-Channel L-Band **Uplink** Interference into Inmarsat-4 From MSV ATC Uses. Versus MSV Mobile Earth Terminal Uses," *ex parte* presentation of Inmarsat, IB Docket No. 01-185, Pile No. SAT-ASG-20010302-00017 *et al.* (filed May 10, 2002), at 4.

- *See* Letter from Inmarsat to Secretary. FCC regarding COMTEK Report, *ex parte* presentation of Inmarsat, IB Docket No. 01-185, File No. SAT-ASG-20010302-00017 *et al.* (filed December 19, 2002)

See id

For these reasons, Inmarsat has urged the Commission, if it authorizes ATC, not to allow ATC to cause more than a 1% increase in the system noise temperature of the Inmarsat-4 network, and to provide an adequate margin for the development of even more advanced future spacecraft technology.[1] Obviously, any restrictions on the number of simultaneously operating ATC terminals also must specify and constrain the EIRP and other salient transmitting characteristics of those terminals.

ATC Base Station Interference Into Inmarsat Mobile Terminals.

As Inmarsat has previously demonstrated, ATC base stations operating in the L-hand would create exclusion zones where Inmarsat terminals will no longer be able to operate.[2] Particularly with the roll-out of new Inmarsat services in the U.S. that the Commission only recently has authorized, Inmarsat fully intends for its customers to be able to use Inmarsat service throughout the United States — in urban, suburban, and rural areas alike. Thus, it is likely that these ATC exclusion zones would actually constrain the availability of Inmarsat service, and that Inmarsat terminals would be expected to operate in the vicinity of locations where ATC base stations could be installed

1. ***A TC Base Stations Pose a Barrier to Deploying Inmarsat Service Throughout the United States.***

The Commission has only recently granted U.S. market access that enables Inmarsat distributors to provide a new, competitive land mobile MSS service throughout the United States via the Inmarsat system. As a result of that decision, Inmarsat is no longer limited to providing maritime service in U.S. inland waterways and in and around the U.S. coast, or restricted in the scope of the aeronautical services it can provide in the United States. This new authority allows Inmarsat service providers in the U.S. the first opportunity to offer a wide range of new, high-speed. land mobile and aeronautical services in urban, suburban and rural areas alike.

The ability of Inmarsat to effectively enter the U.S. market for the first time, and lo offer these new services, would be constrained by any regulatory decision that allows ATC base stations to create "Swiss cheese" holes in Inmarsat's U.S. service area. Inmarsat mobile terminals on the ground, in vehicles, and on ships and planes, will in fact receive harmful interference from ATC base stations, as Inmarsat has thoroughly documented in its numerous technical analyses in this proceeding.

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[1] *See Ex parte* presentation of Inmarsat to the FCC's Office of Engineering and Technology, IB Docket No 01-185. File No. SAT-ASG-20010302-00017 *et al.* (filed November 6, 2002), at 17.

[2] *See, e.g., Technical Annex to Comments of Inmarsat Ventures plc*, IB Docket No. 01-185 (filed October 19. 2001).

The operational impact of these ATC exclusion zones on Inmarsat service within the U.S. was addressed in Inmarsat's *ex parte* submission in this proceeding entitled "Economic Impact of Terrestrial L-Band Services on Inmarsat and Its Users," dated November 25, 2002. As set forth in that paper:

- ATC deployment would reduce Inmarsat's ability to serve the entire United States telecommunications market.
- '.Exclusion zones" created by ATC bases stations, whether located in urban, suburban or rural areas, would create holes throughout Inmarsat's service area within the U.S.
  - Cutting up its service area would limit Inmarsat's ability to successfully deploy new services throughout the U.S., such as:
    - land mobile services, including high speed data for video and audio transmissions by journalists, cargo tracking via micro terminals such as Inmarsat-miniC and D+, and communications supporting precision farming;
    - Inmarsat-4 BGAN services, which will provide new mobile broadband capacity to many areas of the U.S. well in advance of terrestrial rollout of next generation mobile services, in urban, suburban and rural regions; and
    - innovative aeronautical services for approaches to U.S. airports.
- By effectively limiting access to the U.S. market, terrestrial uses of the L-band could substantially reduce a significant new source of revenue for Inmarsat.
- Thus, terrestrial uses of the L-band could reduce the attractiveness of Inmarsat to new investors, such as those new investors needed to achieve substantial dilution as mandated by the ORBIT Act.

2. *Blockage of MSV Satellite Signals Does Not Preclude Inmarsat Satellite Service in the Same Geographic Area*

For the reasons set forth above, Inmarsat expects users of its services in the U.S. to want to be able to operate in the vicinity of those places where ATC base stations may be located. There are two reasons why it would be wrong to assume that Inmarsat could not otherwise provide service in those areas where ATC base stations will be located.

As an initial matter. even in an urban area, MSS signals are not blocked in every direction. or in every location. The fact that MSS systems provided emergency restoration of telecommunications links in New York City after the September 11 tragedy, and that vessels containing lnmarsat terminals operate on the Potomac right outside the Commission's offices. demonstrate that MSS service *can* be provided in *an* urban setting. Moreover, it is reasonable to

expect that an ATC base station will be located on the top of a building, or on a tower, to maximize the chance of signal coverage throughout the desired service area. Thus, an ATC base station can be expected to provide service, and generate interference, in an area (i) where there are locations where some satellite signals, such as those from the MSV satellite. may be blocked by buildings, and (ii) where there are also locations with a clear line-of-sight from an Inmarsat user terminal to an Inmarsat satellite.

Therefore, as Inmarsat has previously demonstrated, the fact that an MSV satellite signal may be blocked in a given urban or suburban area does not necessarily mean that an Inmarsat signal to or from that same geographic area also is blocked. Blockage of a satellite signal is a function of the elevation angles and azimuth pointing directions toward the relevant satellites. These elevation angles and azimuths will be quite different for Inmarsat satellites and the MSV satellite, because of the different orbital locations at which those spacecraft are operaling. Thus, the blockage of the MSV signal path will, under general conditions, be quite uncorrelated with any possible blockage of the Inmarsat signals.

This dynamic was addressed in detail in another context in Inmarsat's May 15. 2002 paper in this proceeding entitled "Inmarsat Response to MSV *Ex Parte* of March 28 concerning 'Monitoring and Control of Ancillary Terrestrial Emissions by MSV's Space Segment."' As shown in Annex 1 of that paper, the tunnel effect of streets in urban areas can cause low signal blockage to and from the Inmarsat satellite, but high blockage to and from the MSV satellite.

Thus, it would not be reasonable to assume that an Inmarsat user will not be able to receive service from an Inmarsat spacecraft at a given geographic location, simply because service to or from an MSV spacecraft is blocked at that location, or at nearby locations. This is particularly true in the case where the MSV user is on the ground, and the Inmarsat terminal is in the air, on an aircraft crossing near that geographic area.

An original and five copies are enclosed

Respectfully submitted,

John P. Janka

Bryan Tramont
John Branscome
Paul Margie
Sam Feder
Barry Ohlson
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